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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/791,855	03/04/2004	Christine Ann Scales	AP973US	5249

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EXAMINER

OWENS, DOUGLAS W

ART UNIT	PAPER NUMBER
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2811

DATE MAILED: 12/14/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/791,855

Applicant(s)

SCALES ET AL.

Examiner

Douglas W Owens

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>9/1/04</u> . | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities:

On page 7, line 21 of the specification, reference figure 104 is identified as an electrical contact. Line 28 identifies reference figure 104 as a via.

In line 14 of page 8, "metalisation" should be replaced with "metalization".

Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1 – 30 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. The term "relatively low" in claim 1 is a relative term which renders the claim indefinite. The term "relatively low" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

5. Claim 14 requires that the strip has width and thickness of the same order. It is not possible to determine the intended scope of the claim.

6. Claim 16 recites the limitation "...the metal silicide..." in line 1. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1 – 3, 12, 14, 20, 23 and 24 are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent No. 4,857,973 to Yang et al.

Regarding claim 1, Yang et al. teach a Schottky barrier photodetector means (Figs. 5 and 6, for example), comprising:

a waveguide structure formed by a metallic strip (58);

said metallic strip having a finite width and thickness and being surrounded by material (66) having a relatively low free charge carrier density; wherein

optical radiation couples to the strip and propagates along the length of the strip (Col. 4, lines 29 – 34; Col. 6, lines 4 – 6);

said material comprising doped semiconductor material, a Schottky barrier between one side of the strip and the semiconductor material (Col. 6, lines 17 – 26);
and

means for applying and extracting bias (72) to the Schottky barrier and extracting a current in dependence upon the optical radiation.

Regarding claim 2, Yang et al. teach a photodetector means, wherein the applying and extracting means comprises at least one Ohmic contact (72; Col. 6, lines 26 – 29) connected to the strip.

Regarding claim 3, Yang et al. teach a photodetector means, wherein the contact means comprises a contact connected to the strip by a connector extending through the semiconductor material (See Fig. 6; connector connects to the resistor (77)).

Regarding claim 12, Yang et al. teach a photodetector means, wherein the material on the opposite side of the strip (right and left side) comprises a semiconductor material, providing a second Schottky barrier at the interface therebetween.

Regarding claim 14, Yang et al. teach a photodetector means, wherein the strip has a width and thickness of the same order. Both the width and thickness can be measured using a one dimensional expression, such as x microns.

Regarding claim 20, Yang et al. teach a photodetector means, wherein the strip material comprises metal or a material that behaves like a metal, since the Schottky contact is a metal-semiconductor contact by definition.

Regarding claims 23 and 24, Yang et al. teach a photodetector means, wherein the semiconductor material is a column IV material, comprising silicon.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 15, 16 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yang et al. as applied to claims 1 and 20 above, and further in view of US Patent No. 3,638,300 to Foxhall et al.

Yang et al. teach a photodetector means, wherein the semiconductor material comprises silicon. Yang et al. do not teach a photodetector means, wherein the strip comprises a metal silicide made of platinum. Foxhall et al. teach that platinum silicide is a suitable material for a Schottky barrier (Col. 3, lines 26 – 29). It would have been obvious to one having ordinary skill in the art to incorporate the teaching of Foxhall et al. into the device taught by Yang et al., since it is desirable to use materials that are well suited for the intended use.

11. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yang et al. as applied to claims 1 and 20 above, and further in view of US Patent No. 5,977,718 to Christensen.

Yang et al. do not teach a photodetector means, wherein the strip comprises indium tin oxide. Christensen teaches that indium tin oxide is a suitable material for forming a Schottky barrier (Col. 1, lines 44 – 48). It would have been obvious to one having ordinary skill in the art to incorporate the teaching of Christensen into the device taught by Yang et al., since it is desirable to utilize materials that are well suited for the intended use.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Douglas W Owens whose telephone number is 571-272-1662. The examiner can normally be reached on Monday-Friday.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie C Lee can be reached on 571-272-1732. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read "Douglas W. Owens". The signature is fluid and cursive, with the first name "Douglas" being more prominent and the last name "Owens" following in a similar style.

Douglas W Owens
Examiner
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